

Project Title :-

AWS Backup Plan for EC2 and RDS

1. Objectives

The primary objective of this project is to deploy and secure a sample database application on AWS using:

- EC2 instance (compute)
 - Amazon RDS (database)
 - AWS Backup for backup and recovery
- The goal is to implement a reliable backup and restore strategy, demonstrate data availability, and ensure data integrity.

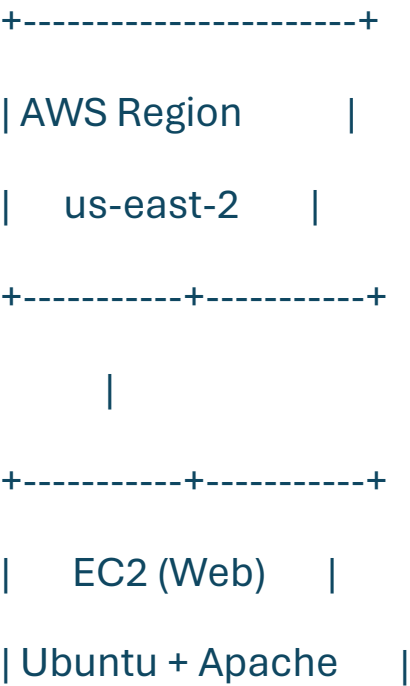
2. Introduction

Cloud-based deployments are now the standard for modern applications, providing scalability, security, and cost efficiency. In this project, we built a simple database-driven application using AWS infrastructure services. We configured backups, tested data recovery, and demonstrated the entire workflow of provisioning, securing, and backing up cloud resources.

3. Technology Stack

Component	Technology / Service
Compute	Amazon EC2 (Ubuntu)
Database	Amazon RDS (MySQL 8.0)
Backup & Restore	AWS Backup
Web Server	Apache2
Programming / CLI	Linux shell, MySQL client
OS	Ubuntu 22.04 LTS (on EC2)
Region	us-east-2 (Ohio)

4. System Structure Diagram

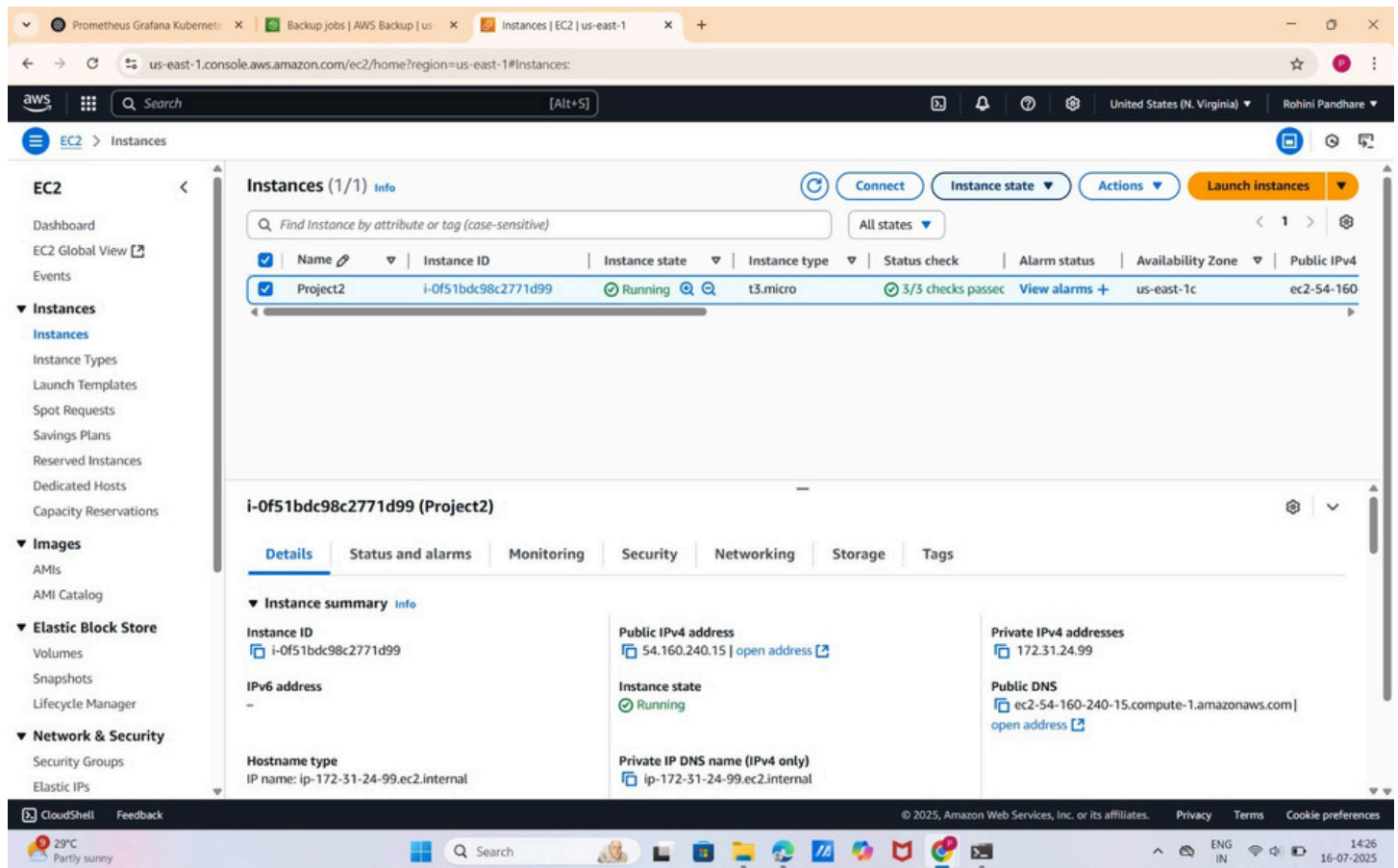


+-----+-----+		
+-----+-----+		
Amazon RDS		
MySQL DB		
+-----+-----+		
+-----+-----+		
AWS Backup		
Vaults & Jobs		
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5. Implementation Steps

Step 1: Launch EC2 instance

- Created a t2.micro EC2 instance in us-east-2a



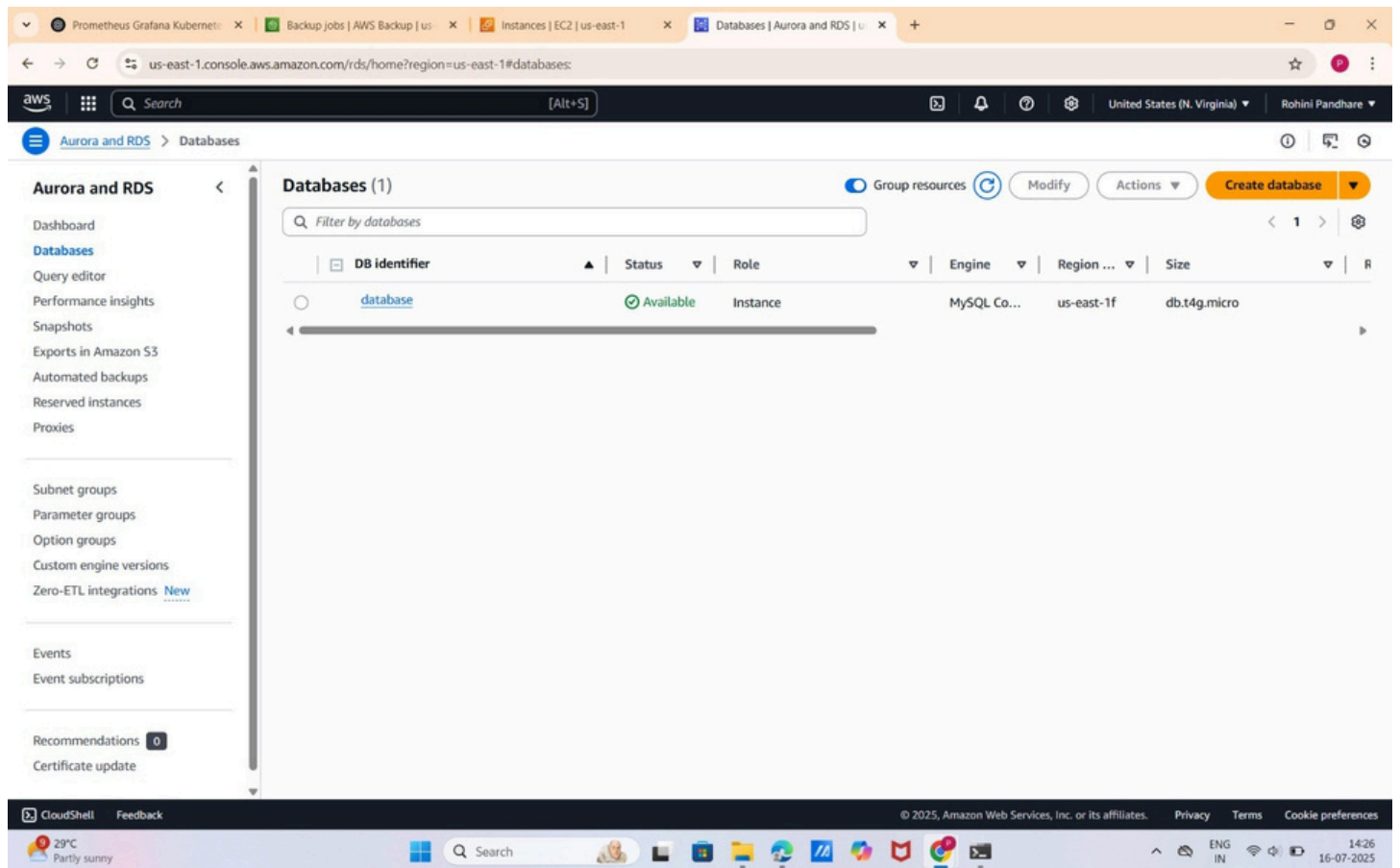
- Configured security groups to allow SSH (port 22) and HTTP (port 80)

Step 2: Set up Apache web server

`sudo apt update`
`sudo apt install apache2 -y`

Step 3: Create Amazon RDS instance

- Launched MySQL database instance (db.t4g.micro) named backup-project-db



- Connected to it from EC2 via MySQL client
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Step 4: Create and populate database

```
CREATE DATABASE testdb;USE testdb;CREATE TABLE sample_table ( id INT AUTO_INCREMENT  
PRIMARY KEY, name VARCHAR(50));INSERT INTO sample_table (name) VALUES ('Backup Test  
1'), ('Backup Test 2');SELECT * FROM sample_table;
```


- Defined backup plans targeting EC2 and RDS

The screenshot shows the AWS Backup console in the 'Backup plans' section. The left sidebar contains navigation links for 'My account', 'External resources', 'My organization', and 'Backup Audit Manager'. The main content area is titled 'Backup plans' and includes a 'How it works' section with three cards: 'Backup plans', 'Recovery points', and 'Compliance monitoring'. Below this is a table of backup plans. The table has columns for 'Backup plan name', 'Last runtime', and 'Last modified'. The plans listed are 'BackupProjectPlan', 'MyEC2RDSBackupPlan', and 'backup12'. The 'backup12' plan is highlighted.

Backup plan name	Last runtime	Last modified
BackupProjectPlan	-	July 16, 2025, 13:31:07 (UTC+05:30)
MyEC2RDSBackupPlan	-	July 16, 2025, 13:59:17 (UTC+05:30)
backup12	-	July 16, 2025, 14:16:06 (UTC+05:30)

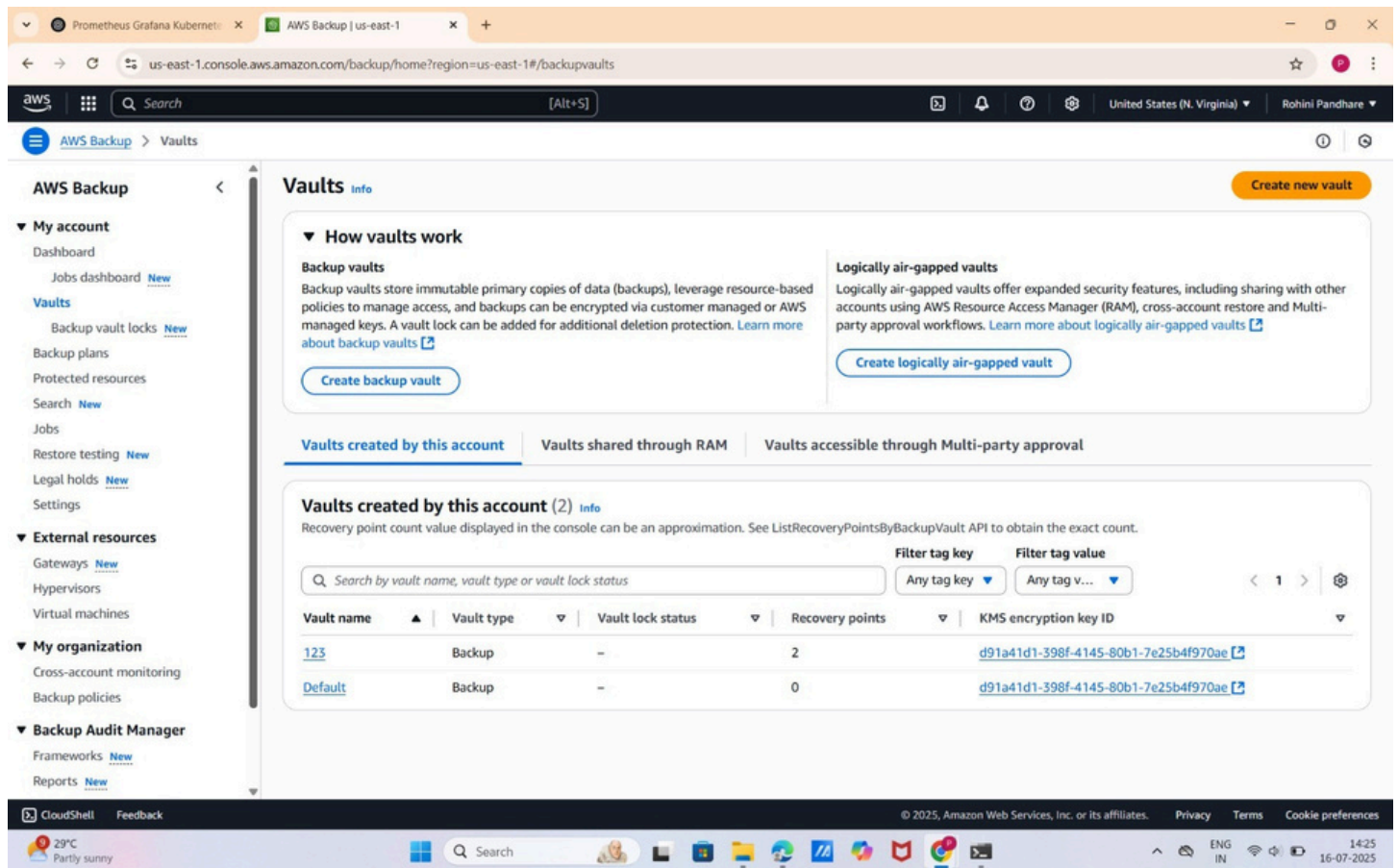
- Ran backup jobs successfully (as seen in AWS Backup console)

The screenshot shows the AWS Backup console in the 'Jobs' section. The left sidebar is the same as the previous screenshot. The main content area is titled 'Jobs' and includes a 'Backup jobs' tab. The 'Backup jobs' tab shows a table of backup jobs. The table has columns for 'Backup job ID', 'Status', 'Resource name', 'Message category', 'Resource ID', and 'Resource type'. The jobs listed are '2132F51F-8984-61F5-2287-4D9E8EECF709', '3EEBCECF-AD98-3C2C-0340-00781777BDE3', 'E81DEDA0-5115-6AB1-879F-B4A343910DA9', '5492F062-F1E6-D9FD-1509-05FBFE7B39EA', '5758A922-AAA4-C3E0-79E6-487DA11924D9', 'CDD0406E-3678-0114-0207-4973E37D7202', 'AC90BD45-D625-E30B-51A5-1214E336C2F0', and '7471DB25-8C06-2C09-669E-8FC41B34521B'. The jobs are categorized by status: 'Completed' (green checkmark) and 'Failed' (red X).

Backup job ID	Status	Resource name	Message category	Resource ID	Resource type
2132F51F-8984-61F5-2287-4D9E8EECF709	Completed	Project2	Success	instance/i-0f51bdc98c2771d99	EC2
3EEBCECF-AD98-3C2C-0340-00781777BDE3	Completed	database	Success	database	RDS
E81DEDA0-5115-6AB1-879F-B4A343910DA9	Completed	Project2	Success	instance/i-0f51bdc98c2771d99	EC2
5492F062-F1E6-D9FD-1509-05FBFE7B39EA	Failed	-	Invalid state	database-1	RDS
5758A922-AAA4-C3E0-79E6-487DA11924D9	Completed	Project2	Success	instance/i-0f51bdc98c2771d99	EC2
CDD0406E-3678-0114-0207-4973E37D7202	Failed	-	Resource not found	database-1	RDS
AC90BD45-D625-E30B-51A5-1214E336C2F0	Failed	-	Invalid state	database-1	RDS
7471DB25-8C06-2C09-669E-8FC41B34521B	Completed	Project2	Success	instance/i-0f51bdc98c2771d99	EC2

Step 6: Verify backups

- Verified recovery points created in backup vaults



- Tested restore functionality

6. Results

- EC2 instance (i-052b662c771a8382d) is running and reachable (3.148.208.56)
- RDS instance backup-project-db is live, running MySQL 8.0, and contains test data
- AWS Backup vaults hold recovery points for both EC2 and RDS resources
- Backup jobs completed successfully with status Success

7. Conclusion

This project successfully demonstrates deploying a database application on AWS, connecting it securely to an EC2 instance, and implementing automated backup strategies using AWS Backup. The workflow ensures data resilience, supports disaster recovery, and showcases practical cloud infrastructure management.

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<https://github.com/abhighante37/AWSBackupSetup>

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